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Swine Outlook - Select Rations for '69

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SELECTING RATIONS FOR 1969

by Emmett J. Stevermer

MANY PRODUCERS will be deciding what level of protein will be most economical for their swine rations in the year ahead.

With the predicted increase in production, hog prices could decline in the year ahead. Therefore, it is imperative that producers select economical rations. With this situation, and particularly when corn is low in price compared to supplement prices, many producers tend to feed lower protein rations.

In the past, some producers have been feeding fairly high levels of protein to improve growth rate and carcass quality. With good hog prices, higher protein levels may be justified for these reasons.

But with lower hog and corn prices, many producers may be tempted to revert back to lower protein levels. Today's meaty pigs are likely to respond more sharply to the change in protein than the pigs of 10 years ago. So while the reduction in protein level may look like good economics, several factors should be considered carefully.

First, remember most commonly used protein supplements also provide many of the important minerals, vitamins and feed additives. When you skimp on protein, you also may be cutting corners on these nutrients, several of which influence performance more than protein. Thus, skimping on protein supplement may be more expensive if not done properly.

For example, 450 pounds of a typical 40-percent protein supplement is mixed with 1,550 pounds of corn to make a 16 percent protein ration. If the same supplement is used to make a 12 percent ration, it takes 200 pounds of supplement and 1,800 pounds of corn. The supplement is reduced by more than half.

In the 16 percent protein ration, the supplement supplies nearly all the calcium and salt, two-thirds of the phosphorus, and nearly all the necessary vitamins. In the 12 percent protein ration, pigs would receive less than half as much of these important minerals and vitamins. Such a shortage may seriously reduce pig performance.

A second item to watch is medication. If a medicated supplement is used, the level of medication may be reduced in changing the ration so that it would be ineffective in maintaining herd health. Medication may even be reduced to a level not approved by the Food and Drug Administration. While the lower level of medication may not be harmful to the animal, except for the lack of health protection, FDA clearances are for specific levels and lower amounts than this cannot be fed legally.

All supplements are not exactly the same in composition. So read the feed tags and follow mixing instructions to the letter. Supplements are designed to produce the specific ration indicated on the tag.

Producers who mix their own rations using corn, soybean meal, minerals and vitamin premixes can alter protein levels by substituting corn for soybean meal. Mineral and vitamin additions need not be be changed.

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Finally, in altering protein levels, recognize that within certain ranges, weight gains are not greatly improved by feeding more protein. But gains are greatly affected by lower levels of protein. If you feel you must reduce the protein levels, it is best to make the change on heavier pigs. Gains will suffer less if pigs weigh more than 100 pounds.

For pigs from 100 pounds to market weight, gains and feed conversion will be about equal within a range of 14 to 18 percent protein. Reducing the protein to 12 percent or less reduces daily gains and increases the amount of feed required to produce a pound of gain.

Pigs under 100 pounds in weight will make nearly the same gains and feed conversion on rations of 15 to 20 percent when mineral and vitamin levels are kept constant. Within this range you may be able to make some profitable ration changes. But gains and feed efficiency drop off rapidly if protein levels are reduced below 15 percent.

Typical experimental results with varying protein rations may provide some performance guidelines to use in deciding on rations (Table 1). Generally, faster gains are accompanied by improved feed efficiency, indicating the higher rates of gain are most economical. However, each producer should use his own feed costs to determine what is most economical for him, considering all the factors.

TABLE 1. Effect of varying protein diets on weight gain and feed efficiency of pigs.

Pig Weights	Level of Protein (%)				
University of Kentucky data					
50 to 75 pounds	18	16	16	14	14
75 to 100 pounds	16	16	14	14	12
100 to 125 pounds	16	14	14	14	12
125 to market	14	14	12	14	10
Average Daily Gain	1.74	1.77	1.73	1.83	1.57
Feed/lb. Gain	3.32	3.29	3.27	3.25	3.70
University of West Virginia data					
50 to 75 pounds	21		18		15
75 to 100 pounds	18		15		12
125 to market	15		12		9
Average Daily Gain	1.61		1.58		1.43
Feed/lb. Gain	3.48		3.77		3.87
University of Georgia data					
40 to 125 pounds	18		16		14
125 to 210 pounds	15		13		11
Average Daily Gain	1.63		1.72		1.61
Feed/lb. Gain	3.00		2.90		3.19
Iowa State University data					
3 weeks to 7 weeks	20				16
7 weeks to 110 pounds	17				13
110 to 200 pounds	14				10
Average Daily Gain	1.56				1.29
Feed/lb. Gain	3.10				3.72
Feed Cost/lb. of Gain*	9.30				9.30

*Corn=$0.95/bu; supplement $6/cwt.

Effect of Pig Diets on Atherosclerosis Studied at ISU

Artery damage from fatty deposits (atherosclerosis) in humans is very similar to that found in pigs. And the causes seem to be similar according to a study by ISU's department of animal science.

S. A. N. Greer, V. W. Hays, V.C. Speer, and J. Y. McCall set out to discover the effects of high energy diets on artery damage and serum cholesterol levels in the bloodstream of pigs. They fed 48 pigs in a variety of ways with a variety of diets. Pigs were fed from one of two fat sources (soybean oil or tallow), had the protein level in their food set at either 12 or 18 percent, while some had one percent cholesterol added to their diets.

The animal scientists periodically took blood samples and tested them for cholesterol levels. When the animals were slaughtered, chest and stomach arteries were examined for damage (lesions).

Those pigs on tallow diets generally had higher serum cholesterol levels in the blood and more lesions in the coronary arteries. Yet cholesterol levels in the blood were not consistently affected by the total energy caloric value of the food intake, nor was artery damage.

Similarly protein levels seemed to have no effect on artery damage but the lower protein level did result in slightly higher serum cholesterol levels. On the other hand, addition of one percent cholesterol to diets had a significant effect. Both serum cholesterol levels in the blood and artery damage were higher than when no cholesterol was fed in the diets.

The experimenters concluded that it wasn't so much the amount of fat that pigs had in their diets as the source of the fat that was important. This agrees with other investigators who report that saturated fats tend to cause atherosclerosis more often than unsaturated fats as well as raising serum cholesterol levels higher. But there seems to be no general agreement on this point.

There is also some disagreement on the effect that saturated and unsaturated fats have on the serum cholesterol levels. But this study indicates unsaturated fats (soybean oil) slightly reduced cholesterol in the blood. The animal scientists noted that when cholesterol was added to diets containing either saturated fats (tallow) or unsaturated fats (soybean oil), serum cholesterol levels were higher and lesions were more common with the saturated fat diet.